

**UNITED STATES PATENT APPLICATION FOR  
CUP HOLDER**

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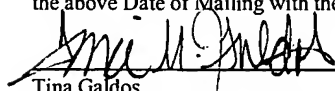
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## **CUP HOLDER**

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### **Field of the Invention**

[0001] The present invention relates generally to a cup holder and in particular, to a cup holder adapted to be coupled to a cup and having air passageways for effective heat transfer from the cup.

### **Background of the Invention**

[0002] Many different cup holders are present in the market. However, the existing cup holders trap heat in between the cup and the cup holder and thereby do not provide adequate heat transfer. What is needed is a cup holder allowing more effective heat transfer from the cup.

### **Brief Description of the Figures**

[0003] Figure 1 illustrates a plan view of the cup holder in accordance with one embodiment of the present invention.

[0004] Figure 2 illustrates a top view of the cup holder coupled to a cup in accordance with one embodiment of the present invention.

[0005] Figure 3 illustrates a plan view of the cup holder in accordance with one embodiment of the present invention.

[0006] Figure 4 illustrates a plan view of the cup holder in accordance with one embodiment of the present invention.

[0007] Figure 5 illustrates a perspective view of the cup holder coupled to a cup in accordance with one embodiment of the present invention.

[0008] Figure 6 illustrates a perspective view of the cup holder coupled to a cup in accordance with one embodiment of the present invention.

### **Detailed Description of the Present Invention**

[0009] Figure 1 illustrates a plan view of an unassembled cup holder in accordance with one embodiment of the present invention. As shown in Figure 1, the cup holder 100 includes a flat band 102, also referred to herein as a body 102, which is preferably made of paper having a top side 104 and a bottom side 106. The top side 104 and the bottom side 106 are preferably arc-shaped and concentric. The top side 104 and the bottom side 106 are preferably parallel to one another, although it is not necessary. As shown in Figure 1, the top side 104 has a radius larger than the bottom side 106. The cup holder 100 includes two coupling ends 108 and 110 which are on opposite ends of the band 102. The portion of the body 102 between the coupling ends 108, 110 and a corresponding pleat 120 are defined herein as the coupling portions 114. The portions 114 are configured to be coupled to each other to form the cylindrical shaped cup holder 100 which is preferably folded flat for easy storage. The coupling portions 114 are preferably coupled to one another by an adhesive, although any other known method or design is contemplated. The flat cup holder 100 is easily able to be adapted to be coupled to a cup 99 by squeezing the pleats 120 toward each other. As will be discussed, the cylindrical shaped cup holder 100 preferably has a plurality of distinct outer and inner surface faces when coupled to the cup 99.

[0010] The band 102 of the cup holder 100 preferably includes several pleats or folding features 110 therein as shown in Figure 1. The surface of the band 102 shown in Figure 1 is the outer surface for example purposes. It should be noted that the band 102 shown in Figure 1 is alternatively the inner surface. The pleats 110 are shown in Figure 1 as extending at an angle from the top surface 104 to the bottom surface 106. In another embodiment, the pleats 110 extend only a portion between the top surface 104 and the bottom surface 106. It should be noted that although the pleats 110 are shown in Figure 1 to be straight, it is contemplated that the pleats 110 are alternatively curved lines. In one embodiment, the pleats are spaced equally apart along the body 102 from one edge 108 to the other edge 110. In another embodiment, the pleats are spaced non-uniformly along the body 102 from one edge 108 to the other edge 110.

[0011] As shown in Figure 1, the band 102 includes seven pleats 110, whereby the portions 112 of the body which are adjacent to each pleat 110 form seven distinct surfaces when the pleats 120 are squeezed toward each other or when the cup holder 100 is coupled to a cup 99. In particular, the cup holder 100 shown in Figures 1 and 2, when folded at the pleats 110, form six distinct portion surfaces 112 and one distinct coupling portion surface 114. It is understood that the cup holder 100 of the present invention alternatively has any number of pleats 110 and distinct surfaces and is not limited to six.

[0012] Figure 2 illustrates a top view of the cup holder 100 coupled to a cup 99 in accordance with one embodiment of the present invention. As shown in Figure 2, the coupling portions 114 of the band 102 attach to one another to form the cylindrical cup holder 100. The cup holder 100 is shown in Figure 2 to have the seven distinct inner and outer surfaces 112. Each portion 112 is bent at an angle with respect to its neighboring portion 112 at the pleats 110. In addition, the cup holder 100 forms several air passageways 118 located between the outer surface 98 of the cup 99 and the inner surface 116 of the cup holder 100 at the pleats 110, 120. The interior surface of the cup holder 100 is shown in contact with the outer surface of the cup 98 at certain locations between two adjacent pleats 110.

[0013] The air passageway is defined herein as the area where the interior surface of the cup holder 100 does not contact the outer surface of the cup 99. Each air passageway 118 preferably extends from the top surface 104 to the bottom surface 106 and provides a significant non-contacting surface between the cup 99 and the cup holder 100. The air passageways 118 allow heat to transfer from the cup 99 while minimizing the amount of heat transferred to the cup holder 100. The air passageways 110 also provide an insulating layer between the user's hand and the cup 99. In addition, the several distinct surfaces provide an enhanced gripping ability for the user while providing an adequate amount of surface on the interior of the cup 99 to the cup holder 100. In one embodiment, the air passageways 118 are shown to be different sizes as in Figure 2. In another embodiment, the air passageways 118 are substantially the same size and dimension.

**[0014]** In one embodiment, each pleat 110 is formed by scoring or embossing a line 110 into the body 102. In another embodiment, the pleats 110 are formed into the body 102 as perforations at the desired pleating locations. In another embodiment, the pleats 110 are formed into the body 102, whereby the body has a lesser thickness of material along the desired pleating location. Thus, the body 102 in general can be formed to have a certain thickness, whereas the areas where the pleats 110 exist have a smaller thickness. This difference in material thickness naturally causes the body 102 to fold at the areas where the material thickness is less. It is contemplated that any other known method is alternatively utilized to form the pleats 110 in the body 102.

**[0015]** Figure 3 illustrates a plan view of the cup holder in accordance with another embodiment of the present invention. As shown in Figure 3, the body 202 of the cup holder 200 is modified to be corrugated. In addition, the cup holder 200 includes six pleats 210 which extend from the top surface 204 to the bottom surface 206 at an angle. As with the embodiment in Figure 1, the coupling portions 214 attach to each other to form the cylindrical cup holder 200. The six pleats 210 form six sides of the cup holder 200 when the cup holder 200 is folded and/or coupled to a cup 99.

**[0016]** As shown in Figure 3, the corrugated body 202 includes a continuous series of concave grooves 208 and convex grooves 209 alternately positioned between the top and bottom ends 204, 206 of the cup holder 200. Each concave and convex groove 208, 209 in Figure 3 is defined as the vertical area within two vertically parallel lines in the band 202. The convex grooves 209 are vertical indentations on the exterior surface and corresponding vertical protrusions on the interior surface of the band 202. The concave grooves 208 are vertical indentations on the interior surface and corresponding vertical indentations on the interior surface of the band 202. The concave grooves 208 create secondary air passageways between the outer surface 98 of the cup and the inner surface of the cup holder 100' which aid in transferring heat out from between the cup 99 and the cup holder 200.

**[0017]** In one embodiment, the vertical grooves 208, 209 are continuous from the top surface 204 to the bottom surface 206 and have a substantially constant depth dimension therebetween. In another

embodiment, the vertical grooves 208, 209 are non-continuous from the top surface 204 to the bottom surface 206 and have a non-constant depth dimension. For instance, the cup holder of the present invention includes shaped indentations 302, 304 (Figure 5) in the body which form protrusions on either the interior or exterior surface of the grooves. Such shapes include, but are not limited to, triangles, squares and diamonds. The shaped indentations are configured in the inner surface of the cup holder, whereby the indentations are protrusions on the exterior surface. Alternatively, or additionally, the shaped indentations are configured in the exterior surface of the cup holder.

[0018] Another embodiment of the present cup holder includes detachable body portions. Referring to Figure 3, the cup holder 200 includes two perforated lines 218 scored into the body 202, where a portion 216 of the body is located between the perforated lines 218. In one embodiment, the body portion 216 is able to be folded at the perforated lines. In another embodiment, the body portion 216 is not able to be folded at the perforated lines. The perforated lines 218 allow the portion 216 of the body 202 to be removed from the cup holder 200. For instance, the interior or exterior surface of the body 202 may be printed to have a coupon or game piece on the portion 216. The user is thereby able to tear the portion 216 along the perforated lines 218 to remove the coupon or game piece. Although the perforated lines 218 are shown extending at an angle from the top surface 204 to the bottom surface 206, the perforated lines 218 are alternatively configured partially between the top surface 204 and the bottom surface 206. In addition, although only two sets of perforated lines 218 are shown in the body 202, any number of perforated lines 218 are contemplated. Although the perforated lines 218 are shown as straight lines configured at an angle, it is apparent that the perforated lines 218 are alternatively curved lines and/or positioned vertically as well as horizontally. Although perforated lines 218 are contemplated, any other feature which allows easy removal of a body portion 216 from the band 202 is contemplated. It should also be noted that the perforated lines 218 are also configurable in the cup holders shown in the other embodiments herein.

[0019] Figure 4 illustrates a plan view of another embodiment of the cup holder 200' in accordance with the present invention. As shown in Figure 4, the band 202' is corrugated and includes several pleats

210' as described above in the other embodiments. Alternatively, the band 202' does not include pleats 210'. The band 202' shown in Figure 4 includes a lip 204' which is located on the top surface. The lip 204' is a non-embossed surface which is in the substantially same vertical plane as the concave grooves 208, whereby the lip 204' does not take on a concave or convex fluted shape. Thus, when the cup holder 200' is attached to a cup 99, the lip 204' does not touch the outer surface of the cup and, instead, acts as a continuous concentric air passageway around the top surface of the cup holder 200'. This is such since the air passageways of each concave groove 208 are not enclosed by a neighboring convex groove 209 at the top surface of the cup holder 200'. Instead, the opening of each air passageway formed by the concave grooves 208 expands in surface area at the top of the cup holder 200' due to the continuous nature of the lip 204'. The continuous air passageway caused by the lip 204' thus allows more heat to dissipate from the cup 99 than a band only having a corrugated fluted design. In addition, the lip 204' prevents the user's hand from touching the top surface of the air passageways where hot air normally escapes, thereby preventing burning or injuring the user's hand.

**[0020]** Figure 5 illustrates a perspective view of a cup holder 300 and cup combination in accordance with one embodiment of the present invention. As shown in Figure 5, the cup holder 300 includes a plurality of semi-conical shaped concave grooves 304 formed into the band 302. Adjacent to each conical triangular concave groove 304 is a substantially flat portion 306 of the band 302. Each flat portion 306 is almost entirely in contact with the outer surface 98 of the cup 99 and aids in gripping the cup holder 300 to the cup 99. Alternatively, the portions 306 of the cup holder 300 adjacent to the concave grooves 304 are convex.

**[0021]** The grooves 304 preferably form individual concave air passageways with the outer surface 98 of the cup 99 and function in a similar manner as in the embodiments shown in Figures 3 and 4. The grooves 304 in the embodiment in Figure 5 have a semi-conical cross section and a varying width dimension from the bottom surface 310 to the top surface 308 of the band 302. It should be noted that the term cone, cone-like, and conical refer to the semi-circular cone shaped grooves 304 shown in Figures 3 and 4. The width dimension of the groove 304 is defined in one embodiment as the distance from one

angled line 312 of the groove 304 to the other angled line 314 of the groove 304. The angled lines 312,314 are non-parallel for a respective groove and form the boundaries of each groove 304, such that the base of the groove 304 is at the top edge 308 and the apex of the groove 304 is at or near the bottom edge 310 of the band 302. In other words, the area between the concave air passageway and the outer surface of the cup 99 is larger at the top edge 308 than the bottom edge 310 of the band 302.

[0022] The increased area of each air passageway from the bottom surface 310 to the top surface 308 allows a greater amount of heat to be dissipated from the cup 99 than the grooves in Figure 3. It should be noted that the angles of the concave grooves 304 are exaggerated in Figure 5 to clearly show the features, and the conical grooves 304 are alternatively configured at any other angle with respect to the top surface 308 and the bottom surface 310 of the band 300. Although the grooves 304 have a concave cross-sectional shape, the cross-sectional shape of the grooves 304 are alternatively triangular, square or any other shape. It should also be noted that any number of grooves 304 are configured in the band 302. In one embodiment, the depth dimension of the concave grooves 304 is substantially constant between the top edge 308 and the bottom edge 310. In another embodiment, the depth dimension of the concave grooves 304 is not substantially constant between the top edge 308 and the bottom edge 310. Further, although each groove 304 is shown to have substantially the same shape, it is alternatively contemplated that the grooves 304 have different shapes from one another and from that shown in Figure 5. Although not shown in Figure 5, the embodiment in Figure 5 alternatively includes pleats (not shown) in the band 302 and/or perforations (not shown).

[0023] The cup holder of the present invention is preferably manufactured by providing a flat sheet of paper. The paper is preferably cut into a band 102 wherein the top surface 104 and the bottom surface 106 are arc-shaped as well as the opposite ends 108, 110. The band is preferably embossed in either one or both surfaces to form the desired number of pleats 100. Alternatively, the thickness of the band 102 is controlled such that the material thickness is less along the contour of where the pleat 110 is desired. If desired, the band 102 is subjected to a press or embossing technique to corrugate the band 102 to have a series of alternating concave and convex grooves. In addition, if desired, one or more perforations 218

(Figure 3) are formed into the band 102, such that the cup holder 100 has removable portions 216 of the body (Figure 3). The band 102 is then rolled and the coupling portions 114 (Figure 1) are attached to each other by an adhesive or the like to create a substantially cylindrical cup holder 100. A cup holder 100 is then coupled to the cup 99, whereby the interior surface of the cup holder 100 substantially encircles the cup 99.

**[0024]** The foregoing description of preferred embodiments of the present invention has been provided for the purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise forms disclosed. Many modifications and variations will be apparent to one of ordinary skill in the relevant arts. The embodiments were chosen and described in order to best explain the principles of the invention and its practical application, thereby enabling others skilled in the art to understand the invention for various embodiments and with various modifications that are suited to the particular use contemplated. It is intended that the scope of the invention be defined by the claims and their equivalence.